

## **Sequence stratigraphic study of Pab sandstone, Mehar Block, Middle Indus Basin, Pakistan**

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The Mehar Block is located along the eastern front of the Kirthar Foldbelt, in the lower part of the Middle Indus Basin, onshore Pakistan. It covers an area of about 5,030 sq. km. PETRONAS Carigali (Pakistan) Limited (PCPL) is the operator for this block with a working interest of 75%. The other partners are Orient Petroleum Inc. (20%) and Pakistan Government Holding (5%).

The primary exploration objectives in Mehar Block and the surrounding areas are the Late Cretaceous age Pab sandstone and Eocene age Sui Main limestone. Mazarani-1 wildcat well drilled in Mehar Block encountered gas in the Sui Main while to the south of Mehar Block exploration wells Zamzama-1 and Bhit-2 encountered significant gas columns within the fluvio deltaic Pab.

Despite numerous wells drilled and many discoveries made from the two main reservoir targets, the depositional setting and facies distribution of these reservoirs, especially the Pab sandstone, are not clearly understood and is more often a geological issue to operators in the area. Previous interpreters in this region introduced different models for the Pab. One of the more popular depositional models is that Pab sandstone is located within two main depositional lobes; i) a Western Lobe; which represents a deepwater setting and ii) an Eastern lobe which is interpreted as within fluvio-deltaic setting. High variability in thickness of Pab sandstone encountered in one location to another within a short distance complicate the interpretation when presumed under a simple static siliciclastic depositional model.

In an effort to further understand and define the reservoir distribution of Pab sandstone as well as the Sui Main limestone in Mehar Block, PCPL conducted a sequence stratigraphic study for the area. The study aims to produce the best fit and workable stratigraphic framework for the said region, and subsequently to identify the best reservoir fairway to locate Mehar-1 exploration drilling candidate. It would also allow for the identification of potential play-types available in the area. The study was performed in March-April 2002 by a team comprising one PCPL personnel and a Geoscientist from PETRONAS' KL office.

This paper discusses the finding of the study. The team concludes that the Mehar Block is situated in a depositional flow shadow zone west of Jacobabad paleo-high that may result in some starvation of deltaic sedimentation causing variable distribution of sands at Pab stratigraphy in the area. Hence, it would be more appropriate and accurate to describe the Pab in relation to its depositional processes e.g. fluvial channel, shoreface, slope fan, basin floor fan within the sequence framework etc. instead of a singular Pab sandstone terminology as traditionally used.